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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/834,492	04/13/2001	Gerardus Johannes Burger	3813.03	3568

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EXAMINER

RAHLL, JERRY T

ART UNIT PAPER NUMBER

2874

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/834,492		BURGER ET AL.	
	Examiner		Art Unit	
	Jerry T Rahll		2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-22 and 24-30 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's communication filed on November 4, 2002 has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims are persuasive and the rejections based upon prior art made of record in the previous Office Action are withdrawn. Many of Applicant's claims are now allowable. In view of further search, however, and the consequent discovery of a previously uncited prior art document, a new rejection is applied to one of the pending claims. This action is **not** made final.

Drawings

2. The corrected or substitute drawings were received on November 4, 2002. These drawings are accepted as submitted.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 2, 4 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 9,091,537 to Sun et al.

6. Sun et al. describes an assembly of a plurality of individually adjustable (see Figures 4-5) optical switching devices formed on a substrate (60) having a principal surface and distributed two-dimensionally (see Col 5, Lns 6-10), with each of the optical devices comprising a formable mechanical element (10, 16, 17) extending in a direction parallel to the principal surface, a refractive optical element (a microlens), on the mechanical element (10, 16, 17), and an electrical control element (36-39) controllably deforming the mechanical element and selecting on of the plurality of directions (see Figures 1-5 and Cols 2-3). Sun et al does not specifically describe the optical elements as providing at least partial transmission therethrough of light incident thereupon into any of a plurality of directions closer to normal than parallel to the principle surface. However, it is well-known in the art that microlenses generally transmit light in a direction normal to their main surfaces. The main surfaces of the microlenses described by Sun et al. are parallel to the principal surface.

7. Sun et al describes the mechanical element as a plate (10). The embodiments shown in the figures use spring arms extending substantially parallel to the principal surface, not torsion bars. However, Sun et al. describes the use of torsion bars for the mechanical structure (see Col 2, Lns 40-46).

8. Sun et al. does not specifically describe a two-dimensional array of optical fibers coupled respectively with corresponding ones of the optical elements. However, optical fibers are well-known in the art for transfer of optical signals. Therefore, it would have been obvious to one of ordinary skill ion the art to use an array of fibers to transfer a signal to the array of optical elements to allow for a remote location of the optical sources.

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9. Claims 2, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,201,631 to Greywall.

10. Sun et al. does not describe the electrical control element including two electrodes with a void therebetween, with one of the electrodes fixed to the mechanical element. Greywall describes an optical switching device using torsion bars as suggested by Sun et al. (see Col 2, Lns 40-46 of Sun et al.). To control the mechanical positioning of the optical element, Grey wall describes an electrical control element including two electrodes with a void therebetween, with one of the electrodes fixed to the mechanical element (see Figures 1-3 and Col 4, Ln 43-Col 5, Ln 27). It would have been obvious to one of ordinary skill in the art to use the electrode structure described by Greywall with eh torsion bar setup suggested by Sun et al. to allow controllability of mechanical positioning of the optical elements. In doing so, the mechanical element would tilt about an axis parallel to the principal surface and rotate out of a plane in the principal surface as shown in Figure 3 of Greywall.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,445,514 to Ohnstein et al. Sun et al. does not describe the optical element as diffractive. Ohnstein et al. describes the use of a diffractive element (see Figure 7, Col 3 and Col 8) with a structure similar to the optical switching devices described by Sun et al. It would have been obvious to one of ordinary skill in the art to use the simpler structure described Sun et al. with the diffractive element described by Ohnstein et al. to allow for use of a simpler structure in a wavelength division multiplexing system.

Allowable Subject Matter

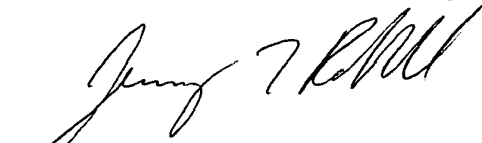
12. Claims 8-19 and 24-30 are allowed.
13. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
14. Claims 8-19 and 23-30 describe two pluralities of optical switching elements, as described earlier in this action, on two substrates optically associated with each other. This is subject matter not described by the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T Rahll whose telephone number is (703) 306-0031. The examiner can normally be reached on M-F (8:00-5:30), with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Jerry T Rahll
January 24, 2003

